# ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.



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Dear Sir:

Construction work at Canada's first nuclear power station at Rolphton, Ontario, will be resumed next month. The job had been stopped last year to incorporate certain technological advances in the design of the station's reactor, a heavy water moderated type fueled with natural uranium. Major changes involved new method of charging and discharging fuel elements and new core design. Basic purpose of the station, which will have capacity of 20,000 electrical kw, is as pilot plant for 150,000 to 500,000 kw stations. Atomic Energy of Canada Ltd., and Ontario Hydro-Electric Power Commission are the two government agencies working on this project, along with Canadian General Electric Co., Ltd. (Nuclear power plant division was recently set up by AECL to produce a preliminary design for a 200,000 kw nuclear power station known as CANDU (Canadian deuterium uranium reactor). (Other BUSINESS NEWS, p. 2 this LETTER.)

JUN 26 RECD

Strength in uranium issues was one of the features of the general stock price uptrend over the last fortnight on the New York and Canadian stock exchanges. Northspan on the New York and Canadian exchanges and Gunnar, Milliken, Pronto and Stanrock on the Canadian exchange all showed gains from a fraction upward. The Easson uranium index is at a new high for 1958, reflecting buying optimism which, however, could not be ascribed to any specific uranium news. (Other FINANCIAL NEWS, p. 2 this LETTER.)

Sale of a model AGN-201 low power research reactor has been made to University of Delaware, Newark, Del., by Aerojet-General Nucleonics, San Ramon, Calif. Purchase of the reactor is being financed through $118,788 grant made to the university by the USAEC; delivered price of the AGN-201 is about $95,000. Nuclear energy liability insurance has been taken out by the university to cover operating hazards. (Other PRODUCT, PROCESS NEWS, p. 3 this LETTER.)

New general manager of the U.S. Atomic Energy Commission is to be Maj. Gen. A. R. Luedecke, who will succeed K. E. Fields; the latter is resigning July 1st. Before Gen. Luedecke's present assignment he had been chief of the Armed Forces Special Weapons Project, and in other capacities has been identified with military nuclear work since 1949. In another job shift, R. W. Cook, the USAEC's deputy general manager left the Commission to go with American Machine & Foundry, New York, which long has been actively engaged in nuclear projects. (Other NEWS of PEOPLE IN NUCLEAR WORK, p. 4 this LETTER.)

Budgeted by West Germany for nuclear research this year is $45,100,000, a considerable increase over last year's figures. Increase were made for building experimental reactors; for education; and to scientific institutes..... Expanded "agreement for cooperation" was made between U.S. and Japan under which U.S. agreed to provide Japan with 2,700 kg of enriched uranium over next ten years, to fuel research and power reactors. Meantime, however, firm agreement has been made by Japanese interests with English concerns for a 140,000 kw nuclear power station to be supplied at estimated cost of £30,000,000.

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ATOMIC ENERGY BUSINESS NEWS...

NUCLEAR REACTOR FOR PROCESS HEAT PROPOSED:- Proposal to build nuclear reactor to produce process heat has been made to the USAEC by Michigan Chemical Corp., of St. Louis, Michigan. The company believes that this approach would be competitive with heat from conventional fuels, and as such would be the first economic application of nuclear energy in the U.S. As outlined by Michigan Chemical, the proposed plant, which would cost $2.5 million, would initially produce steam at 81¢ per 1000-lbs., with reduction to 70¢ per 1000-lbs. later as fuel costs were reduced. This compares with present steam costs from fuel oil of 92¢ per 1000-lbs. The company is now looking for financing, and hopes to interest the Commission in the project.

WESTERN UTILITIES FINANCE NUCLEAR POWER RESEARCH:- A group of eight electric utilities will provide over one-half million dollars during the next two years to further research on economic nuclear power now underway at General Atomic division of General Dynamics Corp. The companies include Arizona Public Service; California Electric Power; Pacific Power & Light; Portland General Electric Co.; Public Service Co. of Colorado; Public Service Company of New Mexico; Utah Power and Light Co.; and Washington Water Power Co. The two year research program will place major emphasis on development of gas-cooled reactors since General Atomic feels they can most effectively produce the high temperatures and pressures needed in modern power plant operation. The two year program will also include an intensification of work now underway at General Atomic on direct conversion of heat into electricity. This will include research for thermo-electric materials particularly suited to withstand the high nuclear radiation fields found in central station nuclear power reactors.

FIRST UNIT OF COMPANY'S NUCLEAR LABORATORIES IN OPERATION:- Critical experiment reactor, now in operation at the Georgia Nuclear Laboratories of Lockheed Aircraft Corp., is first unit completed at this new facility. Located at Dawsonville, Ga., the nuclear research installation will be operated by Lockheed for the U. S. Air Force on development of nuclear powered aircraft. The critical experiment facility, which had been designed and built by General Electric Co. at its San Jose, Calif., plant, will assist in preparing for full scale operation of the laboratory's 10-megawatt reactor, early this Fall.

REACTOR FOR INDUSTRIAL GROUP NEARS COMPLETION:- Construction by AMF Atomics, Inc., of a 5,000 thermal kw nuclear research reactor for Industrial Reactor Laboratories, Inc., is nearing completion on IRL's 300-acre site about 4½-miles from Princeton, N.J. The facility, which will provide fast and thermal neutron fluxes and gamma rays for a variety of experimental applications, will be used by member companies of IRL who include American Tobacco Co.; American Machine & Foundry Co.; Atlas Powder Co.; Continental Can Co.; Corning Glass Works; National Distillers & Chemical Corp.; National Lead Co.; Radio Corp. of America; Socony Mobil Oil Co.; and United States Rubber Co. Formal consent as required by law has been given by the USAEC for transfer of ownership of the reactor from the builder to the Laboratories.

NUCLEAR DETONATION FOR COMMERCIAL PURPOSES CONSIDERED:- The practicability of excavating a harbor in northwest Alaska, between Cape Seppings and Cape Thompson, north of the Arctic Circle, using nuclear explosives, is being studied by the USAEC. The work is part of a USAEC program to determine commercial applications of nuclear explosives for such uses as extraction of petroleum from low grade deposits, production of heat and power, mass production of isotopes, and movement of large masses of earth and rock not otherwise practical or economical.

ATOMIC ENERGY FINANCIAL NEWS...

SALE OF STOCK AND NOTES BY NUCLEAR POWER CONCERN:- Authority to issue $4 million of additional common stock has been requested of the Massachusetts Department of Public Utilities by Yankee Atomic Electric Co. The company, made up of 11 New England utilities, also requested permission to make short term borrowings up to $5 million from its stockholders. With this financing, capitalization of Yankee Atomic would be $8 million of common and $5 million of short term notes.

ACQUISITION PLANNED BY INDUSTRIAL FIRM:- Plans of Salem-Brosius, Inc., to enter the nuclear industry supply field by acquisition of Alloy Manufacturing Co., Pittsburgh, Pa., were announced last week. Directors of both companies have voted favorably on the merger. Plans call for the issue of $2 million of convertible subordinate debentures, and 112,500 shares of $2.50 par common stock. Part of the proceeds will be used in the acquisition.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

PRODUCTS FROM MANUFACTURERS:- Neutron survey meter fast-slow Model 20806, is said to have ten times greater neutron sensitivity than previous models. The instrument is also available as fast neutron survey meter, Model 20807, or as slow, Model 20808. Model 20806 uses printed circuitry, and transistors and is light in weight..... Medical spectrogammeometer of this manufacturer is a single-channel pulse height analyzer with linear or logarithmic count rate meter. Motor driven potentiometer permits continuous spectrum scanning. A counterbalanced arm supports probe scintillation detector and suitable collimators for medical use (up to 60-lb.). Vertical movement range of detector is from 24" to 60" above floor. --Radiation Counter Laboratories, Inc., Skokie, Ill.

New radiation prophylactic, AET (2-aminoethylisothiouronium bromide) is now offered by this producer in commercial supply and as tablets (Antiradon) for clinical investigation. (Discovered by David G. Doherty and associates at Oak Ridge, AET markedly enhanced survival of mice when administered prior to exposure to lethal radiation; similar effects were found on monkeys. Studies on humans are currently being conducted.) --Schwarz Laboratories, Inc., 230 Washington St., Mount Vernon, N.Y.

PRODUCT NEWS:- High purity vanadium metal with 99.5% minimum vanadium content is now available in commercial quantities from Vanadium Corp. of America. It is being sold at prices starting at $40 per pound in quantities of 250-lbs., with machined ingots $20 extra per pound. As-cast ingots carry an extra $10 per pound.

Mevalonic acid tagged with radiocarbon-14 for use in biochemical research is now offered by Tracerlab, Inc., Waltham, Mass., at prices below most commercially available mevalonic acids. The producer states that testing at laboratories of Cornell University showed this mevalonic acid to exhibit complete microbiological activity. Prices are $990 per millicurie; $99 per 100 microcuries; and $75 per 50 microcuries. The 50 microcurie size is sold in this processer's EQ-PAK, and does not require USAEC license.

New commercial distribution plan for boron-10 materials, useful in nuclear reactor shielding and in radiation detection instruments, has been put into effect by the USAEC. Boron enriched up to 92% in the isotope B-10 is to be distributed by the Commission's Chicago operations office, in the form of elemental boron and potassium fluoborate. Michigan Chemical Corp., St. Louis, Mich., is handling storage, packaging, and shipping under USAEC contract. Boron enriched to greater than 92% B-10 may be obtained from Oak Ridge National Laboratory. Oak Ridge can supply boron-10 at the 92% assay level, and also has available boron-11 ranging up to 98.5% in B-11 content. (New distribution procedures are result of shutdown of USAEC's Niagara Falls, N.Y., plant which is effective July 1, 1958.)

Type GM4LB Geiger-Muller tube produced by General Electric Co. (Great Britain) is being distributed in the U.S. by British Industries Corp., Port Washington, N.Y. Background response of the tube is said to be 0.4 counts per minute. Operation is at 1200 to 1400 v, with a plateau length of 150 to 200 v and an average slope of 0.05% per v.

Nuclear materials valued at $36,269 are being provided by the USAEC for use in a research reactor now under construction by the University of Virginia, Charlottesville. The university will receive 25 uranium fuel elements containing approximately 4.5 kg of uranium-235 valued at $18,000; neutron sources valued at $1,069; consumption of uranium-235 from start-up to July 1, 1960 valued at $12,000; and waiver of use charges on the uranium-235 for that period valued at $5,200. Similar assistance for use of their research reactors has been given North Carolina State College; Pennsylvania State University; University of Michigan; and Massachusetts Institute of Technology.

MANUFACTURERS' NEWS:- Increased film badge business at Nuclear-Chicago, 223 W. Erie St., Chicago, has enabled that firm to install a complete microfilm system and dry process white printer. With this new duplicating system, Nuclear can issue radiation exposure reports to customers that are exact duplicates of the reports which it maintains in its own files, eliminating any possible transcribing errors. The company is also issuing a report for each badge with the wearer's name or code number, instead of issuing a blanket report for all badges, as in the past.

Separate chemistry department has now been established by Nuclear Development Corp. of America, White Plains, N.Y., to handle chemical problems associated with the development of nuclear power. Heading the department will be Rene A. Bolomey, formerly chief of the chemical division of Curtiss-Wright Corp.

NEW BOOKS & OTHER PUBLICATIONS...

Nuclear Reactor Experiments:- J. Barton Hoag, editor. Outlines some 49 experiments in nuclear reactor work covering reactor design, construction and operation. 480 pages. --D. Van Nostrand Co., Inc., 257 Fourth Ave., New York. ($6.75)

Symposium on Radioisotopes. Papers presented at September, 1956, meeting of ASTM, covering testing techniques using radioisotopes. 94 pages. --American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. ($2.75)

Uranium; preprint from Minerals Yearbook, 1956. Advance release of developments in uranium for the Yearbook period. No. I 28.37/a:Ur 1/956. --Superintendent of Documents, Washington 25, D.C. (15¢).

High Temperature Radiation-Resistant Fixed Resistors. Research and development by International Resistance Co., Phila., Pa., under USAF contract. 35 pages. No. PB-131655. ($1.00)..... Naval Research Laboratory Research Reactor: Part IV, Control System. Description of controls incorporated to achieve extreme safety and versatility of operations. No. PB-121879. ($2.75) (For parts 1-3, PB-111859; PB-121050; and PB-131303 can be furnished on request.) --Office of Technical Services, Wash. 25, D.C.

Controlled Development for Nuclear Emulsions. Report of work done at Physics Department, University of Rochester. (Microfilm: $1.80; Photostat: $1.80)..... Scintillation Counters with Naphthalene. Investigations at laboratory for nuclear science and engineering, M.I.T. (Microfilm: $2.40; Photostat: $3.30). --Library of Congress, Washington 25, D.C.

MANUFACTURERS' LITERATURE:- New specification sheet describes Nuclear-Chicago's Model C-101 absorbers, which consist of 24 lead and aluminum discs. Information is available from the company at 229 W. Erie St., Chicago 10, Ill. ..... A 15-minute color film is available from Radiation Counter Laboratories, Skokie, Ill., giving brief history of detecting and measuring radiation, and explaining operation of this firm's 256-channel analyzer, with applications in users' laboratories shown.

NEWS IN THE EDUCATIONAL FIELD...

Nuclear reactor sub-critical assembly, completed at Rensselaer Polytechnic Institute, Troy, N.Y. under the direction of the physics and electrical engineering departments, is expected to be the forerunner of similar machines for teaching reactor technology and nuclear physics in other U.S. universities and technical schools. Built for the USAEC under a grant RPI received in April, 1957, the sub-critical reactor contains natural uranium as the fuel, light water as the moderator, and a primary source of neutrons which can be pulsed at will.

Recent approval has been made by the USAEC of grants totaling $1,900,321 to 41 U.S. colleges and universities to expand their facilities for teaching nuclear science and engineering. Cornell University, Iowa State College, Stanford University, and Worcester Polytechnic Institute each received $150,000, the largest individual grants. These four, plus University of Kansas and Virginia Polytechnic Institute, will purchase teaching reactors, out of the grants they have received.

PEOPLE...in nuclear work...

Irving A. Berstein has been elected president of Controls for Radiation, Inc., Cambridge 40, Mass. Dr. Berstein had been vice-president and technical director since the company was organized in 1957; it specializes in techniques for the safe use of atomic energy.

Bernard Kopelman has been appointed director of market development for Sylvania-Corning Nuclear Corp., Bayside, L.I., New York. Dr. Kopelman had been chief engineer of the atomic energy division of Sylvania Electric Products, Inc., prior to the formation of Sylvania-Corning Nuclear Corp., in April, 1957.

Charles D. Gould has joined Landsverk Electrometer Co., Glendale 1, Calif., as chief project engineer. Mr. Gould was founder and director of L. G. Research and for the last fourteen years has been project engineer and chief engineer for the Victoreen Instrument Co.

Theos J. Thompson, associate professor of nuclear engineering and director of the new nuclear reactor at Massachusetts Institute of Technology, will become a full professor on July 1. Dr. Thompson, who designed the M.I.T. reactor and has directed its construction, joined the M.I.T. faculty in 1955. He was formerly a physicist at Los Alamos Scientific Laboratory where he worked on design and construction of the Omega West Reactor.

ATOMIC ENERGY PATENT DIGEST...latest grants made...

ISSUED June 10, 1958 TO PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Circuit for measuring radiation intensities. P. J. Kraayeveld, inventor. No. 2,939,679 assigned to North American Philips Co., Inc., New York, N.Y. (2) Transistorized rate meter. A. Bender, A. de la Lastra, inventors. No. 2,838,680 assigned to Universal Transistor Products Corp., New York, N.Y.

ISSUED JUNE 10, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Oxidative method of separating plutonium from neptunium. L. J. Beaufait, Jr., inventor. No. 2,838,366 assigned to USAEC. (2) Uranium extraction; improvements in elimination of molybdenum by use of ferric ion. H. M. Clark, D. Duffey, inventors. No. 2,838,367 assigned to USAEC. (3) Treatment of ammonium nitrate solutions. T. W. Boyer, J. G. MacHutchin, L. Yaffe, inventors. No. 2,838,368 assigned to USAEC. (4) Process for concentration of ores containing gold and uranium. A. M. Gaudin, J. Dasher, inventors. No. 2,838,369 assigned to USAEC. (5) Recovery of uranium and thorium from aqueous solutions. No. 2,838,370 assigned to USAEC. (6) Method of separating plutonium from lanthanum fluoride carrier. G. W. Watt, R. H. Goeckermann, inventors. No. 2,838,371 assigned to USAEC. (7) Gas cooled nuclear reactors. E. Long, W. Rodwell, inventors. No. 2,838,451 assigned to USAEC. (8) Plates with oxide inserts. J. M. West, J. F. Schumar, inventors. No. 2,838,452 assigned to USAEC. (9) Binary storage element. J. C. Chu, inventor. No. 2,838,661 assigned to USAEC. (10) Method of solid state welding. S. Storchheim, inventor. No. 2,837,818 assigned to USAEC.

ISSUED June 17, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Radiation detector. Nicholas Anton, inventor. No. 2,839,688 issued to inventor of record. (2) Double ray betatron. R. Wideroe, inventor. No. 2,839,708 assigned to Brown, Boveri & Cie, Baden, Switzerland.

ISSUED June 17, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Turbine driven pump. H. E. Means, inventor. No. 2,839,005 assigned to USAEC. (2) Solvent extraction process for uranium recovery. H. M. Clark, D. Duffey, inventors. No. 2,839,357 assigned to USAEC. (3) Process of recovering uranium. T. D. Price, N. M. Jeung, inventors. No. 2,839,358 assigned to USAEC. (4) Magnetic recording head. L. C. Merrill, inventor. No. 2,839,614 assigned to USAEC. (5) Pulse amplifier. C. W. Johnstone, inventor. No. 2,839,619 assigned to USAEC. (6) Pulsed ion source. C. E. Anderson, inventor. No. 2,839,706 assigned to USAEC.

NOTES:- New group of 51 patented inventions developed in the course of USAEC-sponsored research (and property of the U.S. Government) is now offered on royalty-free license by the USAEC, which holds these patents. This brings to 1,448 the number of such patented inventions released on this basis by the Commission; details may be obtained from the Patent Branch, USAEC, Washington 25, D.C.

ATOMIC ENERGY CONTRACT NEWS...

Lump sum contract in amount of $86,847 has been awarded by the USAEC to Emerson Radio & Phonograph Corp., Jersey City, N.J., with Emerson acting for the "CEM Group." Contract covers technical and management study of industrial applications of high-level radiation. The CEM Group is made up of Emerson, General Aniline & Film Corp., and Revere Copper & Brass, Inc. Included in the study, which is expected to take about 10-months to fulfill, is a survey of world technology on uses of high gamma radiation; survey of current and planned U.S. uses of large gamma irradiators; and comparison of gamma radiation with competitive radiation sources. Emerson will sub-contract the technical aspects of the study to Arthur D. Little, Inc., Cambridge, Mass.

Contract has been signed by USAEC with Nuclear Products-Erco Div. of ACF Industries, Inc., to develop and construct a nuclear power plant at Elk River, Minn., which will be operated by Rural Cooperative Power Association. ACF's contract provides that the company will furnish closed-cycle boiling water nuclear reactor and conventional fuel-fired superheater with combined capacity of 22,000 electrical kw. Water would be used as moderator and coolant and mixture of thorium and uranium oxide as fuel. The ACF contract is of the cost-type with a ceiling of $9.269 million including fixed-fee. Facilities provided by RCPA will cost about $1.750 million.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

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